
Space Weather Forecast

Issued on Saturday 25 January 2025 at 01:02 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: A chance of G1-G2 geomagnetic storms this UTC weekend, with a ongoing chance of isolated Moderate solar flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity was at Moderate levels, with peak activity a Moderate flare at 24/2104UTC from AR3961 in the southwest disk.

There are currently eight numbered sunspot regions on the Earth-facing disc, and two small unnumbered regions. The largest, most active and nominally most complex region remains AR3961 in the southwestern quadrant. The other region of potential note is AR3971 in the northwest. Other regions generally small and seemingly stable.

No new Earth-directed Coronal Mass Ejections (CMEs) have been confirmed - frequent jet-like emissions from AR3961 have been linked with faint, apparently mainly southwest-heading CMEs, these features slow and generally expected to pass below and ahead of the Sun-Earth line to no anticipated effect. A larger CME was released from behind the oncoming eastern limb, again hinting at a possible arriving region here over the UTC weekend. No Earth effects are expected given the emission longitude. Potential CMEs associated with recent flaring remain under investigation.

Solar Wind / Geomagnetic Activity: The solar wind persisted at Slightly Elevated levels, around 450km/s, continuing to only very slowly decline from recent enhancement. The interplanetary magnetic field (IMF) was weak, with the important north-south component varying only weakly.

The net result of the above solar wind measures was Quiet geomagnetic activity.

Energetic Particles / Solar Radiation: No solar radiation storms were observed, with a very weak 10MeV proton enhancement (peaking below 1pfu) in the previous 24-hour period now faded.

Four-Day Space Weather Forecast Summary

Solar Activity: Generally Moderate solar activity expected with a likelihood of isolated Moderate solar flares and a slight chance of isolated Strong flares.

Solar Wind / Geomagnetic Activity: Up to two CMEs may affect Earth in the period: firstly a 21 January CME, perhaps narrowly glancing 25/0600UTC; and secondly a potentially fuller glance from

a 22 January CME, due 25/1800UTC. No new faster solar wind enhancements feature in the forecast.

Quiet to Unsettled activity is expected in general, but with a chance of Minor to Moderate G1-G2 geomagnetic storms through days 1-2 (25-26 Jan) in association with potential CME arrivals, with a slight chance of Strong G3 geomagnetic storm intervals.

Energetic Particles / Solar Radiation: A slight chance of enhancements exceeding the S1 Minor Radiation Storm threshold should any notable solar flares occur.

Geomagnetic Storms

Geomagnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	40	30	5	5
Strong	G3	No	15	10	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 (M Class)	Yes	60	60	60	60
Very Active	R3-R5 (X Class)	No	10	10	10	10

Solar Radiation Storms (High Energy Protons)

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	15	15	15	15
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = cm ⁻² sr ⁻¹ s ⁻¹)						